

ABSTRACT OF THE DISCLOSURE

A tunable dielectric structure includes a first layer of dielectric material, a second layer of dielectric material positioned adjacent to the first layer of dielectric material, with the second layer of dielectric material having a dielectric constant that is less than the dielectric constant of the first layer of dielectric material, and electrodes for applying a controllable voltage across the first dielectric material, thereby controlling a dielectric constant of the first dielectric material, wherein at least one of the electrodes is positioned between the first and second layers of dielectric material. The dielectric materials can be formed in various shapes and assembled in various orientations with respect to each other. The tunable dielectric structure is used in various devices including coaxial cables, cavity antennas, microstrip lines, coplanar lines, and waveguides.